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Immunogenicity of *Mycobacterium avium* subsp. *paratuberculosis* specific peptides for inclusion in a subunit vaccine against paratuberculosis

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Paratuberculosis in ruminants is caused by an infection with *Mycobacterium avium* subspecies *paratuberculosis* (MAP) and is a chronic disease characterized by granulomatous enteritis. Available vaccines against paratuberculosis consist of variations of whole bacteria with adjuvant showing various efficacies. The main problem with available vaccines is their interference with surveillance and diagnosis of bovine tuberculosis and paratuberculosis. Our ultimate aim is to develop a subunit vaccine consisting of selected MAP peptides, which allow differentiation of infected from vaccinated animals. Here, 118 peptides were identified by *in silico* analysis and synthesized chemically. Peptides were tested for reactivity and immunogenicity with T-cell lines generated from PBMCs isolated from MAP infected goats and with blood samples from MAP infected calves. Immunogenicity of peptides was evaluated using full blood IFN- γ release assay and ELISPOT measuring IFN- γ release of PBMCs. A number of peptides resulted in high T cell proliferative responses in T-cell lines and some peptides induced IFN- γ production measured by ELISPOT. This indicates that some of the peptides in the panel contain T cell epitopes and are immunogenic. In the near future, a panel of selected peptides will be tested for efficacy as a vaccine against paratuberculosis with calves or goats experimentally infected with MAP.